

ABSTRACT OF THE DISCLOSURE

An exhaust heat energy recovery apparatus for an internal combustion engine that efficiently recovers exhaust heat energy without increasing engine exhaust back pressure, and a Brayton cycle apparatus applicable to the exhaust heat energy recovery apparatus. A Brayton cycle apparatus 1 using a scroll compressor 4 and a scroll expander 6 has a simplified and downsized structure. A working fluid is compressed inside a scroll compressor 4 and expanded inside a scroll expander 6 in spaces partitioned and sealed by combinations of fixed scrolls and orbital scrolls. The conversion efficiency from heat energy to kinetic energy is high. Heat is transferred from the exhaust to the working fluid through a pipe wall of a flow passage 30a and an expander case 12 of the scroll expander 6. This further downsizes the Brayton cycle apparatus 1. The back pressure of the energy source including the exhaust is unaffected.